Adam Smith's Theory of Prudence Updated with Neuroscientific and Behavioral Evidence

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KEY WORDS
Prudence; other-perspective taking; distancing; loss aversion; time discounting; self-projection; simulation; episodic future thinking; risk aversion

ABSTRACT

Other-perspective taking (OPT), distancing, time discounting as well as risk and loss aversion highly affect decision-making. Even though they influence each other, so far these cognitive processes have been unrelated or only partly related to each other in neuroscience. This article proposes a philosophical interpretation of these cognitive processes that is elaborated in the updated theory of Adam Smith's prudence (UTSP). The UTSP is inspired by Smith's account of prudence and is in line with the neuroscientific and behavioral studies on OPT, distancing, time discounting as well as risk and loss aversion. The UTSP represents a framework aiming to interpret and connect these cognitive processes, while providing a consistent and empirically sound account of a "Smithianly" prudent style of decision-making. The two pillars of the UTSP are the shift of perspective in space and time (from the individual to others and from the present self to the future self) and loss aversion. On the basis of this theory, a normative updated theory of Smithian prudence is outlined (NUTSP). The latter is useful for moral philosophy for two reasons: firstly, according to preliminary evidence, it is effective in guiding the agent in decisional contexts in which her well-being is at stake and she can affect other people with her actions. Secondly, since the NUTSP is based on neuroscientific findings on decision-making, it has a sound empirical basis that prevents a source of alienation for the agent.

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This article does not contain any studies with human participants or animals performed by the author.

Introduction

Other-perspective taking, distancing, time discounting as well as risk and loss aversion highly affect decision-making. Even though they influence each other [1-8], so far these cognitive processes have been unrelated or only partly related in neuroscience [9-10]. In this article, I fill this gap by suggesting a philosophical interpretation of these phenomena that is inspired by Adam Smith's account of prudence and has received preliminary confirmation by neuroscientific and behavioral findings. In Smith's system of ideas, prudence is the only virtue that is both a moral and an economic excellence: it is the appropriate care of oneself that in economics enables the betterment of one's own material condition; in ethics this care of oneself leads to the betterment of one's own reputation founded on skills, knowledge, and virtues.

There are no studies of neuroscience or behavioral economics that explicitly investigate individuals' prudent behavior. The word "prudent" is rarely used, and when it is used it is a synonym of "cautious" [11], "far-sighted" [12], or "self-controlled" [13]; in conditions of risk, "prudent" is meant as "risk-averse" [14]. These traits are never studied together as a set of features that characterize a particular pattern of decision-making. In this article, I gather the above-mentioned traits and several others coming from the Smithian description of prudence in an updated definition of prudence. Then, I elaborate a descriptive theory of prudence, the *updated theory of Smith's prudence* (UTSP), which is based on that definition. The UTSP is a theoretical framework organizing other-perspective taking, distancing, time discounting as well as risk and loss aversion in a single framework and explaining their mutual relations. The UTSP describes a style of decision making that can be defined "Smithianly" prudent. On the basis of the UTSP, I outline a *normative updated theory of Smithian prudence* (NUTSP), which I will show to be a feasible and effective guide for one's own economic and moral betterment.

1. Why interpreting several cognitive processes with Adam Smith's account of prudence?

An interaction between Smith's prudence and various neuroscientific and behavioral studies on decision-making is possible because Smith's account of human actions in the moral and economic domains is perfectly compatible with the

neuroscientific and behavioral findings on decision-making in these two domains, thanks to his empirical method of describing and explaining behavioral patterns that is inspired by the Newtonian scientific method [15: 202-205; 16: ch. 5; 17: 34–50, 92–94].

Compatibility between Smith's perspective and that of both neuroscience and behavioral economics is a preliminary condition that makes the choice of interpreting several empirical data with Smith's concept of prudence possible, but it does not completely justify the choice; there are two reasons motivating the latter. The first is that Smith was one of the few philosophers to focus on prudence as a virtue of character that connects the moral and economic life of individuals and that explains some seemingly unrelated behavioral patterns. The second reason is that Smith's account of prudence is confirmed by scientific findings on other-perspective taking, emotion regulation in the form of distancing, low time discounting, and behavioral aversion to loss and risk. The scientific corroboration of Smith's ideas should not be read as a demonstration that Smith is a neuroscientist *ante litteram*, since his knowledge on the human brain is still anchored to the Cartesian dualism between mind and body [18: 32]. However, Smith's account of several factors of the individual's psychology and drives for action are still topical and proved to be reflected in the particular functioning of our brain. It is clear that Smith does not state that these factors are embodied in the brain; he rather affirms that they are principles of human nature, namely they are constant characteristics of every individual's behavior ([19] II.i.5.10: 78; see also TMS I.i.1.1: 9; II.ii.3.4-5: 86-87; III.6.12: 176-177).

Some elements of Smith's view of human decision-making, for instance sympathy, can be found in the accounts of other authors, such as Francis Hutcheson and David Hume. Therefore, it is not excluded that even such accounts are compatible with neuroscientific and behavioral findings. However, Smith provides a uniform and consistent view of human behavior, in which, with one principle, i.e. prudence, he explains and connects several moral and economic behavioral instances of individuals, which are: the adoption of the perspective of others, self-command, the aversions to risk and loss, and parsimony, which derives from long-sightedness and patience.

2. Smithian prudence

Before outlining the theory of prudence, it is necessary to clarify Smith's view of prudence and its components.

Smith focuses on prudence in the first section of Part VI, which he adds to the sixth edition of the *Theory of Moral Sentiment* (TMS) (1790). In the first edition of the TMS (1759) (TMS IV.2.6: 189) and in its draft compiled in the 1750s, he presents a shorter description of this virtue [20: 54]. In *An Inquiry into the Nature and Causes of the Wealth of Nations* (WN), Smith deals with the utility of prudence when he discusses parsimony, which is the economic side of prudence, in the chapter on the accumulation of capital in book II ([21] II.iii.13-19: 337-338).

According to Smith's definition, prudence is «[t]he care of the health, of the fortune, of the rank and reputation of the individual, the objects upon which his comfort and happiness in this life are supposed principally to depend» (TMS VI.i.5: 213). Prudence consists of taking care of various factors that constitute the individual's happiness, including her physical well-being, the regard originating from other people, and the possession of what contributes to health, namely material goods, and what contributes to the esteem from others, namely material goods and a virtuous character (TMS VI.i.1-5: 212-213). Prudence is based on the adoption of the perspective of real or hypothetical individuals, requires self-command in the form of emotion regulation and patience, demands long-sightedness, and is affected by hazard aversion and the asymmetrical perception of pain and pleasure, as I will discuss in detail.

2.1 Adoption of the perspective of other people and of the impartial spectator

Two psychological mechanisms of Smith's system are involved in prudence: *sympathy* and the *impartial spectator*.

Sympathy is the fellow-feeling with an agent's passion that an individual − the spectator or observer − experiences by imaginarily changing her place with the agent she is observing (TMS I.i.1.5: 10). In this process, the spectator does not imagine what she herself would do in the agent's situation, but she imagines being the other by changing her own circumstances and traits with the agent. This is why sympathy is not a selfish principle. In Smith's moral system, the agent's conduct is justified only if the observer approves of it, and this occurs if the observer sympathizes with the agent's emotions. The observer's sharing of sentiments with the agent does not arise

from the view of the agent's passion, but from the view of the situation that activates the passion (TMS I.i.1.10: 12).

The impartial spectator is a psychological mechanism that the individual adopts when she evaluates her own actions. In this context, she imagines dividing herself into the person that acted and an impartial observer that judges that person (TMS III.1.6: 113). The agent's action is approved of and thus justified only if the impartial spectator sympathizes with her (TMS III.1.2: 109).

When pursuing an object of prudence, firstly, the agent changes her perspective with that of other people or of the impartial spectator through imagination. Therefore, the imagined change of place makes the agent take a step outside her concern for herself and view her situation more objectively. Secondly, the agent verifies from the new stance if real or hypothetical observers would sympathize with her and thus approve of her action. Spectators never approve of actions in which the individual sacrifices others to her interests because they never sympathize with feelings that allow the agent to exploit others for the pursuit of her own happiness (TMS II.ii.2.1: 83; TMS II.iii.1.5: 95-96). This because, according to spectators, she «is but one of the multitude in no respect better than any other in it» (TMS II.ii.2.1: 83). Therefore, though the individual «is much more deeply interested in whatever immediately concerns himself than in what concerns any other man» (*ibidem*), prudence is not an unrestrained care of one's own well-being, as sympathy disciplines the pursuit of one's own happiness [22: 63-64]. Prudence is a constrained care of oneself because its objects cannot be pursued at the expense of others, that is by sacrificing others for one's own purposes or, in Kantian terms, by using others as means to one's own ends [23: II, 37-41]. The prudent agent recognizes the actions respecting this demand by employing sympathy and the impartial spectator.

The objects of prudence are one's own personal interests and well-being, thus prudence is a *self-regarding* or *self-centered virtue*. Yet it includes a regard for others, as the consideration of other people's feelings and judgments limits and directs the pursuit of one's own well-being (TMS VI.concl.1: 262) [24: 134-137].

2.2 Self-command

Acting according to the rules of prudence is a strenuous activity because it is difficult to limit our own needs and passions, as we feel them more intensely than those of other people (TMS VI.ii.1.1: 219). For this reason, according to Smith, self-

command is required for the implementation of the constrained care of oneself (TMS VI.iii.1: 237). Self-command is the ability to exercise discipline over one's own feelings (TMS III.3.23-25: 145-147). It is fundamental to prudence because it limits the selfish passion that we feel when we assess a conduct of ours in which our personal interests influence our judgments and thus oppose the impartial spectator and other people's judgments. Smith often illustrates the regulation of one's own feelings by using expressions and terminology proper to music and harmony. For instance, in TMS I.i.4.7: 22, he states that the person exercising self-command «must flatten, if I may be allowed to say so, the sharpness of its natural tone, in order to reduce it to harmony and concord with the emotions of those who are about him».

Smith describes two strategies of self-command: in medium self-command, we try to adopt the perspective of our company and in this way we calibrate our feelings in such a way that we feel for ourselves no more than what our peers feel for us (TMS III.3.24: 146). In high self-command, we overcome the need of real watchers by adopting the impartial spectator's perspective. If this practice becomes habit, we begin thinking and feeling like the impartial spectator (TMS III.3.25: 146-147).[1]

2.3 Patience

Smith's prudence requires self-command even in the form of patience, which consists in attributing the same value to a present pleasure or pain and to a similar future pleasure or pain. When the prudent agent faces a decision between a present pleasure and a greater one in the future, her desire for present gratification is more vivid and intense than that for future pleasure. Hence, she has a natural preference for immediate gratification (TMS IV.2.8: 189-190), i.e. she naturally attributes greater value to this option. However, thanks to self-command, she reduces the intensity of the desire for present enjoyment; consequently, she assesses the two pleasures from the same distance and thus chooses the greater delayed gratification (TMS VI.i.11: 215). Patience is an intertemporal concept establishing an ordering between the agent's present and future needs. Along with long-sightedness, it concerns intertemporal choices, namely choices in which the outcome of the options is delivered in different times.

[1] There is a third strategy to modulate one's own feelings, according to Smith. However, since this strategy is a mere shift of attention and is typical of people with low self-command (TMS III.3.23: 145), it is not dealt with here.

2.4 Long-sightedness

As patience is a preference for greater pleasures in the future over smaller ones in the present, it is tightly linked with another component of Smith's prudence: long-sightedness. The latter is the ability to discern the consequences of our actions and the advantage or detriment that is likely to result from them (TMS IV.2.6: 189). Long-sightedness and patience are the traits that make the prudent agent assess her own happiness from a temporally extended perspective. In the first edition of the TMS, in which Part VI had not yet been inserted, prudence was defined as the sum of long-sightedness and self-command in the form of patience (*ibidem*). This definition remains in all the subsequent editions. Patience and long-sightedness render the agent parsimonious (TMS VI.i.12-13: 215) and indeed they are defined the most useful qualities to the individual by Smith (TMS IV.2.6: 189).

2.5 Hazard aversion

In the achievement of happiness, prudence entails hazard aversion, namely a dislike to that which puts the objects of prudence at risk, and a preference for security. In fact, prudence «is rather cautious than enterprising, and more anxious to preserve the advantages which we already possess, than forward to prompt us to the acquisition of still greater advantages» (TMS VI.i.6: 213).

It may appear that hazard aversion hinders patience, as waiting for a delayed gratification entails a degree of risk that the present pleasure does not entail. Yet preference for security and hazard aversion do not imply that the prudent agent is blocked in and completely satisfied with her *status quo*. For, firstly, security is only one of the objects of prudence, hence the prudent agent's hazard aversion is not infinite but limited (TMS VI.i.6: 213); secondly, the prudent agent is eager to undertake new projects or enterprises if they are well concerted and prepared (TMS VI.i.12: 215). This is because, according to Smith, one of the fundamental principles of human nature is the desire to better one's own condition, and prudence, as the care of one's own condition, is prompted by this desire (WN II.3.28: 341-342; TMS VI.i.7: 213). In the economic sphere, hazard aversion makes this betterment slow and gradual as the prudent agent improves her condition in safe ways, namely through real knowledge and skill in her profession, assiduity and industriousness in her occupation, and frugality and parsimony in her expenses (TMS VI.i.6: 213).

Parsimony, i.e. the union of patience and long-sightedness, renders this betterment continuous, as parsimony makes possible the progressive accumulation of capital (TMS VI.i.12: 215; WN II.iii.14-16: 337). Hence, in the economic side of Smith's prudence, patience and long-sightedness are not nulled by hazard aversion because the latter is not infinite and it is restrained by the desire to better one's own condition.

In the moral sphere, the betterment attained through prudence is a good reputation that is founded on real knowledge, skills, and virtues (TMS VI.i.4: 213; VI.i.7: 213). Since Smithian prudence leads to moral and economic betterment, it is an excellence of character both in the moral and in the economic spheres in which the agent acts.

2.6 Asymmetrical perception of pain and pleasure

According to Smith, the origin of hazard aversion is to be found in human natural constitution, since individuals perceive adversity and prosperity asymmetrically, being more sensitive to pain than to pleasure. Therefore, the loss of one of the objects of prudence brings the individual far below her natural state of happiness compared to the elevation attained by the gain of one of these factors (TMS I.iii.1.8: 45; III.2.15: 121).

As individuals feel more directly and intensely their own emotions than those of others, this aversion to loss only concerns one's own loss: the individual is naturally more concerned with the loss her little finger than with the ruin of a hundred million of people in a distant country such as China, according to Smith. However, the impartial spectator prevents that this preference be adopted and that the selfish impulses prevail over the concern for others (TMS III.3.4: 136-137).

In conclusion, prudence consists in the pursuit of one's own present and future happiness in condition of low uncertainty and under the constraint of not using others to pursue this happiness. The six components of prudence are: the adoption of the perspective of others (which can result in sympathy), self-command as regulation of emotions, self-command as patience in intertemporal choices, long-sightedness, aversion to hazard, and the asymmetrical perception of pain and pleasure. Each of these is very close to a cognitive process investigated by neuroscience and behavioral economics. In the next section, I will integrate Smithian prudence with the cognitive processes corresponding to it.

3. The cognitive processes corresponding to Smithian prudence

3.1 Other-perspective taking

The adoption of another person's perspective that characterizes Smithian prudence is very close to the notion of other-perspective taking (OPT). The latter is a form of *cognitive empathy*. Cognitive empathy is the ability to cognitively understand other people's mental states and requires *theory of mind* (ToM), namely the capacity to infer and represent another person's mental state. Within the concept of cognitive empathy, Shamay-Tsoory 2011 [25] distinguished *cognitive ToM*, if ToM is about making inferences on other people's beliefs, from *affective ToM*, if the inferences are about other people's emotions. In contrast, *emotional empathy* is the capacity to understand other people's feelings by sharing their affective state.[2] In emotional empathy, the empathizer's affective state is elicited by the directly perceived, imagined or inferred feeling of another being, it approximates that of the target, and the empathizer is aware that the source of her affective state is the target [26-27]. Emotional empathy enables the sharing of the other's feelings usually through bottom-up processes of empathy, such as affective and somatic resonance, but can also involve top-down processes of empathy, such as ToM and OPT [25]. In healthy subjects, cognitive and emotional empathy work together [26: 516].

OPT is the adoption of the point from which another individual perceives reality. It consists of three components: ToM, imagining being another person, and contextual appraisal. OPT is grounded in complex cognitive processes such as a) regulation of the emotion and cognition that are elicited by the other person, which can result in emotional empathy, even though OPT does not automatically become a sharing of emotions because – like Smithian sympathy – it entails an evaluation of the situation [28-30]; b) cognitive flexibility, which is the ability to shift a course of action or thought according to the demands of the situation; c) attention filtering; d) monitoring of thoughts and actions [31].

More precisely, the Smithian adoption of other people's perspective is very similar to a type of OPT called *imagine-other perspective* or *other-oriented perspective taking* [32], which consists in imagining how we would feel if we were the other, having the other's needs, thoughts and feelings [33-34]. Its opposite is the *imagine-*

[2] Singer and Tusche 2014 made a similar distinction between a cognitive system and an emotional system of empathy, but labelled cognitive empathy as mentalizing, ToM or cognitive perspective taking, while emotional empathy is simply called empathy [26].

self perspective, which consists of imagining how we would feel if we were in another person's position. In Smith's account, the prudent agent never uses other people as means to pursue her own happiness not only because she searches for other people's approbation and she knows that they do not approve of actions exploiting individuals, but also because she has employed the imagine-other perspective. In fact, as in that type of OPT she imagines how she would feel if she were another individual, she focuses on the other's needs and interests and she relativizes hers. The agent can also imagine exchanging her perspective with a person possessing a high degree of impartiality, a sort of impartial spectator, in order to select the action that is judged proper from the most objective perspective.

In OPT, the individual simulates the experience of being another person through imagination. The conscious simulation of the experience of being another person offsets the lack of knowledge and details about the person whose perspective the agent is adopting. Similarly, in Smith's psychological account of sympathy, the latter is based on an imaginary change of place. Imagination has a pivotal role in Smith's whole moral system, because if the agent lacks the capacity for imagination, she cannot form an idea of other people's feelings; consequently sympathy cannot occur and moral judgments deriving from the approbation or disapprobation of an act cannot be formulated [35: 310-311; 36: 22-35].

The mirror neuron system is one of the resources useful in understanding the others' mental states that can support OPT. The mirror neuron system is composed of the neurons that discharge both when an agent sees another person performing an act and when she performs the very same act (for a review, see [37-38]). There is also limited evidence of a similar mirror mechanism for basic emotions at single-cell level in humans [39-40].[3] As, in order to take other people's perspective, one needs to understand what the other person is aiming at or feeling, the mirror neuron system supports OPT by providing information on other people's basic intentions and emotions through an unconscious simulation of their actions and facial expressions respectively [35: 304-306; 41: 193]. However, it should be noted that, contrarily to the mirror neuron system, OPT is a conscious stimulation, is not automatic, and does not necessarily result in the sharing of emotions.

[3] At neural-system level, evidence for physiological mechanisms of mirroring emotions comes from a greater number of experiments than the evidence at a single-cell level [26-27, 31].

3.2 Distancing

In Smith's account of prudence, medium self-command requires the consideration of other people's feelings and thoughts; high self-command needs the consideration of the impartial spectator's mental state. In other words, self-command is based on the ability to adopt the perspective of others.

The two strategies of self-command described by Smith are very similar to a type of *emotion regulation* that in psychology and neuroscience is called distancing or detachment or self-focused reappraisal. Emotion regulation is a strategy of self-control comprising the deliberate initiation, modification, maintenance or inhibition of the occurrence, form, intensity or duration of emotions [42-43]. Reappraisal is a form of emotion regulation that consists in reinterpreting the meaning of a stimulus, by changing how one thinks of a situation, in order to decrease or increase its impact (respectively down- or up-regulation of emotions) [44]. Distancing is a tactic of reappraisal that exploits OPT, namely it is one of the specific ways in which the strategy of reappraisal is implemented [43: 9]. Distancing takes two directions: viewing an event from a detached third-person perspective − usually in order to down-regulate an emotion − or from a vivid first person perspective − usually in order to up-regulate an emotion [1, 43, 45]. Distancing in the form of the third person perspective is the typical strategy adopted by high and medium self-command individuals, even though, in the case of high self-command individuals, the third person is more abstract because it is the impartial spectator.

3.3. Low time discounting

Patience is a component of Smithian prudence that employs intertemporal self-command. If patience is considered together with long-sightedness, it is very similar to what in economics and neuroscience is referred to as low time discounting or low temporal discounting. The latter is the phenomenon by which people value an immediate reward more than if they were to receive the same reward in the future, because they discount its future utility in a *hyperbolic* or *quasi-hyperbolic* manner with increasing delay-to-reward [46-51]. Long-sightedness and patience belonging to Smithian prudence render the agent a *low temporal discounter*, that is an individual who discounts future outcomes little in intertemporal choices.

Smith's explanation of the process underlying the gratification delay, in which self-command limits the intensity of the desire for present pleasures, is the same

pointed out by the latest neuroscientific findings on temporal discounting. In fact, contrarily to the axiom of revealed preferences of mainstream economics, the activity of evaluating options is detached from that of choosing an option: Figner et al. (2010) [52] showed that present pleasures are valued more than future pleasures by the individual, but then she chooses future pleasures because self-control processes intervene favoring larger gains in the long run.

The prudent agent does not sacrifice her future well-being for present desires and thus she less steeply discounts it. Hence, the updated concept of prudence includes the care of oneself constrained not only by the consideration of the effects of one's action on other people, but also by the consideration of the effects on one's own future self. Preliminary evidence indicates that the two constraints of prudence are based on the same neural mechanism. By means of an affective forecasting task, Mitchell et al. (2011) [53] showed weaker activity in the ventromedial prefrontal cortex (VMPFC) in subjects thinking about their future selves, compared to the condition in which they predicted how much they would have enjoyed present events. In addition, the greater the present > future difference in VMPFC, the less patient the subjects were in two intertemporal choice tasks. VMPFC was also less activated when participants predicted another individual's enjoyment of present and future activities than their own enjoyment in a present activity. More precisely, VMPFC response was nearly identical when people envisioned their future enjoyment and another person's present enjoyment. Albrecht et al. (2010) [54] found a similar result in the anterior MPFC (aMPFC), a region adjacent to VMPFC. In this study, aMPFC activity was very similar when subjects chose for themselves in an intertemporal choice task with two delayed alternatives and when they chose for a stranger in trials with one present alternative. These studies lead to the conclusion that VMPFC and aMPFC encode other people and the self in the future in the same way, most likely by representing the subjective state associated with a simulated experience.

The data from Mitchell et al. (2011) and Albrecht et al. (2010) could be interpreted in the light of the Smithian concepts of adoption of other people perspective and sympathy: the individual that discounts the future more steeply fails in two processes of perspective-taking. Firstly, she does not see herself from a third party perspective; consequently, she does not relativize her present needs. Secondly, she does not identify herself with her future self, therefore, she does not feel her future self's needs. At the same time, Smith's prudence can be integrated by Mitchell et al. (2011):

if the individual perceives her future self as someone else, she will take care of her future self less than her present self because she conceives herself in the future as a stranger; thus she is not as concerned for her future self as she is concerned for her present self.

A recent study confirmed the role of perspective taking in intertemporal choices in another brain region: the posterior temporoparietal junction (TPJ). TPJ is implicated in overcoming one's one viewpoint. Its temporary disruption with transcranial magnetic stimulation resulted in a strong reduction of the value of the delayed reward and thus in impatient choices [55].

3.4. Risk and loss aversion

Hazard aversion typical of Smithian prudence is an aversion to the factors that put the agent's economic and social status at risk. It is very similar to risk aversion, which is a classical subject of behavioral economics [56] and neuroscience (see for instance [57-62]; for a review, see [63]). Risk aversion is an attitude towards risk that consists in the preference of a sure payment to a gamble with an equal or higher expected value.[4] Attitude towards risk is subjective and influences the value that an individual attributes to a risky option in decision-making: the more an agent is risk-averse, the more the utility of a gamble is reduced by the risk of the options. The *Expected Utility Theory*, which models risky choices by decomposing them into the utility of possible outcomes and their probability, accounts for risk attitude by converting the outcomes into their utility and weighting this utility with an index of risk attitude [64-65]. *Prospect Theory*, namely the descriptive theory of choice elaborated by Daniel Kahneman and Amos Tversky, multiplies the value of each outcome with a decision weight that represents the impact of the outcome probability on the subject [66-67]. The weighting function of Prospect Theory, along with its value function, better accounts for the individual's behavior exposed to risk than *Expected Utility Theory*..

As seen, according to Smith, the origin of hazard aversion is due to human constitution that renders pain a more pungent sensation than the opposite and corresponding pleasure. In behavioral economics, this phenomenon is called loss aversion and consists in the individual's avoidance of choices that can lead to losses. It reflects the degree to which people are more sensitive to decreases in their wealth

[4] The expected value is equal to the sum of all possible outcomes weighted by their respective probability and it is not influenced by subjective attitudes toward risk.

than to increases of the same objective magnitude. Loss aversion is one of the main psychological phenomena included in *Prospect Theory*. Similarly to Smith's statement that individuals are more sensitive to pain than to pleasure, Prospect Theory states that they weight losses about twice as powerfully as gains [66-67].

Smith states that the agent avoids risky choices with the alternative of a loss, on the one hand, and the alternative of a gain, because she prevents the possibility of experiencing the pain of a loss. Prospect Theory gives the same account of people's risk aversion in mixed gambles. They are gambles that offer an equal probability of a gain or loss and thus depict a choice set similar to that discussed by Smith, even though he does not specify the probability of the alternatives. In mixed gambles, Prospect Theory contends that the individual's risk aversion is caused by loss aversion: since losses loom larger than gains, people usually reject gambles with a 50/50 chance of either losing $ 100 or gaining $ 100; they accept the gamble only if the potential gain is about twice the amount of the potential loss.

In summary, the correspondences between the components of prudence and several neurobiological and behavioral phenomena are the following: the adoption of another person's perspective described by Smith parallels OPT in the form of imagine-other perspective; Smith's view of high and medium self-command is very close to the strategy of emotion regulation called distancing; Smith's account of patience and long-sightedness corresponds to low time discounting; Smith's depiction of hazard aversion is similar to risk aversion; lastly, the asymmetrical perception of pain and pleasure in Smith's system anticipates the behavioral phenomenon of loss aversion.

4. The updated definition of Smithian prudence and its normative and descriptive elements

On the basis of the similarities between Smith's components of prudence and the cognitive processes that I have described, an updated definition of Smithian prudence can be outlined, which stands at the intersection between moral philosophy, economics, and neuroscience. The updated concept of Smithian prudence is the attitude of choosing in view of one's present and future well-being, taking into account other people (in the sense of not using them as means) and opting for the alternative with a low probability of loss. Similarly to − but more in general than − the Smithian definition of prudence, in the updated notion, the objects of prudence are

what contributes to the individual's well-being, and the aim of prudence remains the betterment of one's own economic and moral conditions. In this updated version, Smithian prudence is interpreted as a style or approach of decision-making defined Smithianly prudent and comprising OPT, distancing, low time discounting as well as risk and loss aversion.

The updated version of prudence contains both descriptive and normative elements of human behavior. With regards to the descriptive components, from a biological and evolutionary perspective, the objects of the updated prudence – which are the factors that contribute to the individual's well-being − are something that the individual naturally seeks, since they derive from the tendency of living creatures to preserve themselves [68: 12-13]. Even the aversions to risk and loss are natural dispositions of human beings in mixed gambles. [66-67, 69]. Individuals, though, can exercise control upon risk and loss aversion and thus enhance or diminish them through various strategies, in order to take the optimal decision. The latter depends on the characteristics of the choice set, such as the magnitude of the outcome, its probability, the time of the outcome delivery, and the information available to the individual. One of the main strategies to influence risk and loss aversion is recognizing and manipulating the heuristic procedures that an individual deploys to simplify the representation and evaluation of a choice set, which is thus mentally transformed or edited by her [66]. The modification of the description of the choice alternatives, namely the frame in which they are presented [70-71], can condition aversion to risk and loss as well. Considering the aim of the UTSP – i.e. giving a single interpretation of the cognitive processes corresponding to the components of prudence –, the most interesting strategy to reduce loss and risk aversion is the adoption of a third party's perspective when taking a risky decision [72]. In fact, since this strategy is a form of distancing aimed at down-regulating the negative emotions triggered by the prospect of losing something, it points out the close connection amongst OPT, distancing, and loss and risk aversion.

The normative side of the updated Smithian prudence comprises what the individual forces herself to do, namely, the two constraints that she imposes on the care of herself: not using others when pursuing one's own purposes and not sacrificing her future well-being for the present well-being, namely being a low time discounter. OPT is a mechanism enabling the agent to apply these constraints to the care of oneself.

Hence, the Smithianly prudent style of decision-making has a mixed nature. On the one hand, the pursuit of well-being along with loss and risk aversion are descriptive traits of human behavior, even though loss and risk aversion can be regulated by the agent. On the other hand, the constraints involved in the care of the self represent the normative elements of which the updated prudence demands adoption.

5. The updated theory of Smithian prudence (UTSP)

In the updated definition of Smithian prudence, OPT, distancing, low time discounting, as well as loss and risk aversion are linked to each other according to specific relations. In other words, the updated definition of Smithian prudence suggests a unitary interpretation of these cognitive processes. This interpretation is the UTSP, which is a descriptive theory in the sense of a framework interpreting and connecting different elements of decision-making that neuroscience and behavioral economics have studied but only partially connected so far.

The general criterion that guides the elaboration of the UTSP is to provide a consistent and empirically sound account of the Smithianly prudent style of decision-making. Because of the similarity between the components of prudence and some cognitive processes of decision-making, the UTSP is based on Smith's intuitions on several human behavioral patterns that seem to find a correspondence in neuroscientific and behavioral findings. Hence, the UTSP is the result, on the one hand, of the observational-experimental method used to investigate the cognitive processes of the Smithianly prudent behavior; on the other hand, it is the result of the conceptual-logical method that has been used to organize and connect the cognitive processes corresponding to the components of Smithian prudence.

The first pillar of the UTSP is *self-projection*, which is the ability to shift from the current situation to alternative perspectives. In fact, firstly, the demand of not using others is respected through OPT in the form of imagine-other perspective. The adoption of an impartial person's stance needs further ability of imagination in order to identify oneself with an individual with such characteristic. Secondly, since distancing is a strategy of emotion regulation that is founded on taking other people's perspective, even distancing has a fundamental resource in the ability to simulate alternative perspectives. Thirdly, OPT is also an essential strategy in intertemporal choices, because the ability to take the future self's perspective results in less steep temporal discounting [3-8]. The ability to imagine detailed future experiences by

adopting the future self's point of view is called *episodic future thinking* [73].[5] Hence, in the UTSP, the principle that unifies OPT, distancing, and low temporal discounting is the shift of perspective in space and time: from the individual to others and from the present self to the future self. Evidence supporting the connection of OPT, distancing and low temporal discounting under the cognitive process of self-projection comes from Buckner and Carroll (2007) [10]. The authors proposed that self-projection is the underlying process common to a set of cognitive functions: navigation or topographic orientation, autobiographical memory, episodic future thinking, and ToM, which is a component of OPT. The brain network supporting these different forms of self-projection includes frontal, prefrontal and frontopolar regions, medial and lateral parietal lobe regions as well as the medial temporal pole. Buckner and Carroll's self-projection system is based on the observations that (i) the areas involved in navigation, prospection, autobiographical memory, and ToM overlap; (ii) the abilities of navigation, prospection, autobiographical memory, and ToM emerge together at about the age of four; and (iii) patients with deficit in autobiographical memory are impaired in conceiving the personal future and in self-referential processes.

Hassabis and Maguire (2009) [74] identified a similar brain network responsible for the simulation of experience, although they characterized this network as the neural substrate not of projecting the self in different contexts, but rather of constructing scenes through the reactivation, retrieval, and integration of semantic, contextual and sensory components. They conceived the scene-construction system as the network active when attention is directed away from the current external status and focused towards an internal representation of an event. ToM is excluded from the system because it is not considered essential to the construction of a scene.

The systems of Hassabis and Maguire (2009) and Buckner and Carroll (2007) are not incompatible. Although further evidence is needed to understand precisely how scenes and perspectives emerge from brain activity, the scene-construction network could be considered the basis of the self-projection network, with which the UTSP shares the ability to shift to alternative perspectives, in the future or into other people. Moreover, using the *activation likelihood estimation* approach, Spreng et al. (2009)

[5] In the case of the relation between episodic future thinking and OPT, it is not specified if the former depends either on imagine-self perspective or on imagine-other perspective because this distinction is less significant when the self and the other, i.e. the future self, coincides, as is in this case.

[75] presented a quantitative and systematic demonstration of the common neural network of mentally projecting oneself from the present moment into a simulation of another time, place, and perspective. In this study, the neural underpinnings of autobiographical memory, episodic future thinking, and ToM, but not navigation, displayed the highest degree of overlap. This suggests that self-related processes are the common element that ToM, autobiographical memory, and episodic future thinking share, as navigation does not necessarily need the recollection of autobiographical information. In addition, using multivariate analysis, Spreng and Grady (2010) [76] found a common pattern of activation underlying autobiographical memory, episodic future thinking, and ToM within the same subjects. Finally, O'Connell et al. (2015) [9] developed a theoretical framework of intertemporal choices that connects OPT with episodic future thinking. The authors proposed that intertemporal choices are grounded in the ability to imagine how the other – who is the future self in such choices – feels.

In the self-projection mechanism, OPT, distancing, and low time discounting share the advantage that the simulation of an experience represents an enrichment of the relevant elements of a decisional context. Clearly, the additional information is not objective, because it comes from a simulation, hence it is made of the individual's past experiences. The effective utility of the simulated experience in helping the agent to make a decision stands in her ability to recognize a situation as similar to a familiar class and thus to retrieve the information that is suitable to the current situation. Therefore, simulated experiences need the capacity to generalize from observed cases and draw analogies from the familiar to the unfamiliar.[6] On the basis of the agent's ability of self-projection, the UTSP explains why OPT is proportional to social distance and low time discounting is subject to temporal distance. When the individual has to simulate an experience that is very different from her past experience, as it is the case of OPT with strangers or with the self in a distant future, the mechanism of simulation can only sketch a vicarious experience and this makes the identification more difficult for the individual.

The second pillar of the UTSP is loss aversion. On the basis of Smith's account of hazard aversion and its origin, which is very close to that provided by Prospect

[6] This capacity is called *case-based reasoning*. It is a form of reasoning in which new problems in complex situations and with imperfect information are solved by retrieving relevant similar cases from memory, establishing correspondences between these cases and the new problems, and adapting the prior solutions to fit the new problems [77-78].

Theory, the UTSP states that loss aversion causes risk aversion because the agent's aversion to risk consists in the fear of losing what the individual already possesses or could possess. The mere possibility of losing something is enough to make the individual refrain from risky choices, as losses loom larger than gains.

Concerning the relation between the two pillars of the UTSP, the latter reads loss aversion as a simulation of the effective negative experience of losing something. The neural areas processing negative states, such as the insula, are active during the perception of a noxious stimulus, but also in the anticipation of losses with a prospective aversive signal [69, 79-80]. The anticipation of losses can be interpreted as a form of unconscious and automatic simulation because both processes trigger the same bodily and affective reactions in absence of the factor that usually causes these reactions, i.e. the effective loss. However, the simulation of a loss can be also deliberate and conscious, if the individual chooses to adopt the perspective of herself after losing something or the perspective of another person that has lost something.

In conclusion, the UTSP is founded on the ability to consciously or unconsciously simulate subjective experiences. This ability gathers together OPT, distancing, and low temporal discounting – which are forms of self-projection – as well as loss aversion and consequently risk aversion (Fig. 1).

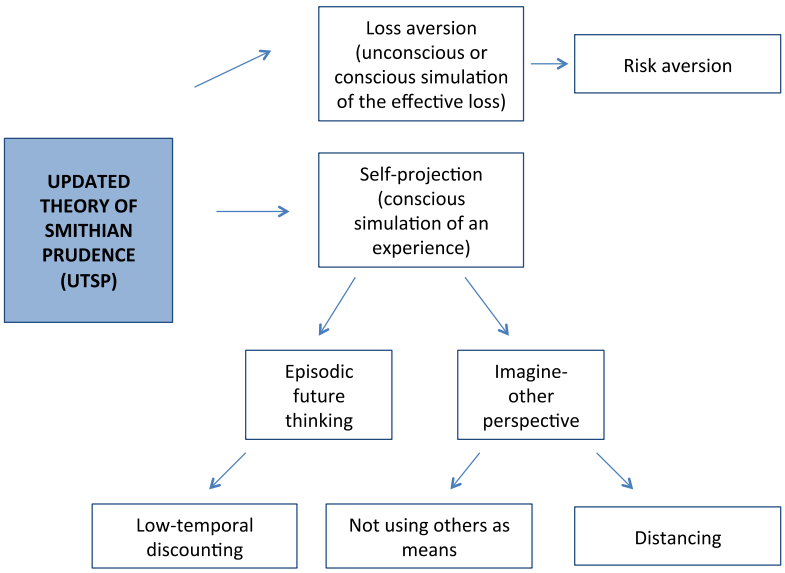

Fig. 1 Proposed scheme of the elements characterizing the updated Smithian prudence that are connected in the UTSP. One of the main strategies of low-temporal discounting is episodic future thinking, whereas distancing and the prohibition of using others as means are implemented through the

adoption of the imagine-other perspective. Both episodic future thinking and imagine-other perspective are part of the self-projection ability, which is the first pillar of the UTSP and consists in a conscious simulation of an alternative perspective. Risk aversion is caused by loss aversion, which is the second pillar of the UTSP and derives from a conscious or unconscious simulation of a loss

6. The normative updated theory of Smithian prudence (NUTSP)

The UTSP is a descriptive theory, but since it is founded on a concept that is partly normative, the NUTSP can be outlined on the basis of the UTSP. This normative theory demands two prescriptions: to not treat others as means and to consider one's own well-being in the long run. It suggests respecting these requirements by respectively adopting the perspective of others and that of one's own future self.

The NUTSP is a piece of a normative moral theory and answers to Socrates's question: "How should I live?" in contexts in which the agent aiming at economic and moral betterment faces a decision transversal to the moral and economic spheres. In these situations, the individual's well-being is at stake and other people can be affected by her decision and subsequent action. There are many, and often contrasting, definitions of well-being [81]. The aim of the NUTSP is not to specify what well-being is in detail, but rather to indicate how to pursue it. The normative moral theory of which the NUTSP is a piece should provide a definition of well-being. If the agent wants to better her moral and economic conditions, the NUTSP is a guiding principle to attain them; it is a sort of Kantian *hypothetical imperative* ([23] II: 24-26).

6.1 The normative justification of the NUTSP

The NUTSP prescribes, when pursuing one's own well-being, to not use others as means and to consider one's own future well-being. These two demands would better one's own moral and economic conditions, respectively.

Although the NUTSP is founded on the UTSP, the justification of the former cannot be derived from the observations of neuroscience and behavioral economics, because this would be a violation of Hume's Law[7] and a naturalistic fallacy.[8] Since the NUTSP is a hypothetical imperative, one way to justify it is to prove that this

[7] Hume's law states the impossibility of deriving or deducing a prescriptive statement only from assertions that describe how the world is configured ([82], III.i.1: 469-470).
[8] It is the mistake of identifying that which is natural with that which is good or right ([83], ch. 1, sect. 10: 9-10).

theory enables the individual who is interested in pursuing well-being and betterment of her own condition to effectively achieve them. Proving this efficacy would render the NUTSP a valuable resource for moral philosophy. There is currently some preliminary indirect evidence of the effectiveness of the NUTSP.

With regard to the prescription of considering one's own future well-being, which is also suitable for a normative economic theory, the steep discounting of one's own future utilities produces myopic decisions. These are a type of sub-optimal decision, in which the agent maximizes immediate rewards and consigns her future self to pay the costs of her present behavior. This conduct is common in several spheres of decision-making, such as saving for retirement, dieting, and staying healthy [84-87].[9] The demand of the normative updated theory of prudence would reduce the burdens that one's future self has to pay and thus it would contribute to the goal of bettering one's own economic condition. The proof that this request of the NUTSP is effective in bettering one's own economic condition comes from the studies on self-control, a key prerequisite for patience and gratification delay. Moffitt et al. (2011) [89] showed that self-control in childhood predicts good socio-economic position and income earned in adulthood, even when accounting for social class origin and intelligence quotient. Romal and Kaplan (1995) [90] found that people with high self-control, measured with Rosenbaum's Self-Control Schedule, were better able to save money than people with lower levels of self-control. Yet so far no studies have investigated the influence of a stable low-discounting trait on the agent's economic condition, controlling for other predictors of socioeconomic status.

According to the link between low temporal discounting and OPT suggested by the UTSP, the adoption of the future self's perspective would be further effective in discounting future outcomes less steeply. There are several studies that have proved that episodic future thinking attenuates the individual's discounting rate (see, for instance [3-8]). However, although the definition of episodic future thinking requires a first person perspective (i.e. seeing a future event from one's own future perspective) [73], these studies did not instruct the subjects to exclusively adopt the first person point of view, which corresponds to the OPT applied to the future self. Hence, they did not rule out the adoption of the third-person perspective (i.e. seeing

[9] In general, in these spheres, choosing the delayed option is usually the optimal decision. However, in contexts in which the delivery of the delayed reward is highly uncertain and/or there is an important opportunity cost associated, choosing the immediate reward is more adaptive or rational [88].

one's own future self that experiences a future event) [91]. The effects on time discounting of the perspective adopted when thinking about one's own future and the improvement of intertemporal choices through episodic future thinking are intriguing topics for future research.

In the matter of prohibiting treating others as means, OPT in the form of imagine-other perspective indicates to the individual the actions that in a given context respect this norm. This means that by imagining being the other, the agent better acknowledges which possible action that she is going to perform as an agent results in exploitation of the other. The role of OPT is not prescribing norms, but rather identifying the actions that respect the norm given by the NUTSP and thus making possible the undertaking of them. Proving empirically that the adoption of other people's perspective is effective in bettering one's own moral conditions is not easy. The difficulty is due to the fact that there is no agreement on what can be considered a betterment of moral condition and how it can be measured. Yet two considerations can be forwarded. Firstly, in neuroscientific studies, the adoption of an imagine-other perspective elicits empathic concern, which is a fundamental constituent of prosocial behavior [29, 92-93]. There is no univocal definition of prosocial behavior, and depending on the definition of prosocial behavior its moral evaluation changes [94: note 9: 196-197, 200-201]. In general, however, an act beneficial to other people is considered prosocial [95]. I consider not treating others as means a foundation of prosocial behavior, since it is a form of taking others into account. The link between the adoption of an imagine-other perspective and prosocial behavior does not mean that OPT gives a motivation to implement a prosocial action to every agent. Yet in the case of the NUTSP, the addressees are individuals who are already motivated to better their moral conditions and thus follow the requirements of the NUTSP to achieve this aim; indeed, the NUTSP is a hypothetical imperative[10].

[10] For this reason, psychopaths, who are impaired in emotional empathy but not in cognitive empathy [96-97], are *a priori* excluded from the requirements of the NUTSP, as they do not aim at being moral and *a fortiori* at attaining moral development. In other words, although they can be Smithianly prudent because they have no deficit in the ability of OPT, they are not interested in being as such. In healthy subjects, OPT can result in antisocial behavior in highly competitive contexts, in which OPT is used to exploit others and reach one's own aims [98], but this is not the case of prudent behavior by definition. In addition, it is true that adopting the perspective of others can result in an aversive rather than prosocial response, such as withdrawal. However, in healthy subjects, this happens when the agent imagines herself being in the other person's situation [29, 92-93], not when she imagines being the other person, which is the case of imagine-other perspective that is used by the prudent agent.

The relation between emotional empathy and morality is complex. Indeed, if OPT results in empathizing too much with a person and exploiting others in order to help her, this act is not moral. However, as the NUTSP requires not using others as means, too much emotional empathy cannot result in the exploitation of someone in favor of another person. In addition, Decety and Cowell (2014) [99] showed that while emotional empathy can at times be a source of immoral actions, OPT is less subject to the bias of partiality. Moreover, since in the imagine-other perspective the individual focuses on the other's feelings and needs, this shift of perspective helps the agent to step back from the focus on herself and her needs, and to be more impartial. Therefore, so far there is evidence that the prohibition of treating others as means through the adoption of their or an impartial spectator's perspective produces two effects: the exercise of the individual's impartiality and empathic concern, which can be considered fundamental components of the agent's moral development [100].

Hence, the first reason why the NUTSP is useful for moral philosophy is that it is a piece of normative theory that proved to be effective in guiding the prudent agent, according to preliminary evidence. To corroborate this evidence – and also to provide the UTSP with a sounder basis –, this article suggests directions for future research, as shown in section 7.

6.2 The feasibility of the NUTSP

Neuroscience and behavioral economics are not normative disciplines. However, their contribution to a normative theory such as the NUTSP – and thus to moral philosophy − is fundamental because the description of how agents behave and choose sheds more light on how these agents are [101]. The aim of Smith's lifelong study goes in a direction similar to that of neuroscience and behavioral economics: developing a science of man founded on the observation of human nature [15: 26-27, 289, 519; 102].

In addition, neuroscience can identify those demands coming from the normative level that cannot be fulfilled since they are not compatible with the agent's nature, namely they are completely different and extraneous to the way humans make decisions. The addressees of morality are human beings, hence a norm valid for them should take into consideration how they are. The point of contact between the descriptive level of reality and the normative level of reality stands in the conditions of feasibility of morality, in the sense that neuroscience can criticize normative

theories in the aspects in which these theories do not fit with experience at all, with the result that the individual would assume their norms only by alienating herself from her nature. The morally alienating theories that are not feasible can be defined lost or unnatural moral theories [103]. Determining the exact criterion with which to judge the natural or biological feasibility of a moral theory would take this topic too far afield, but the core of this criterion is to verify whether such a theory brings about the alienation of agent from herself. This alienation is the giving up of something that is an essential element of the way in which the agent takes a decision.

The confirmation of Smith's components of prudence by neuroscience demonstrates that the NUTSP is biologically feasible and does not cause alienation in the individual that follows this theory. In fact, neuroscientific studies show that the normative elements of prudence, namely low temporal discounting and the consideration of others in the form of not using them as means, are perfectly compatible with our brain functioning, since agents are observed adopting these normative elements, albeit with individual variability. This adoption occurs with different degrees of effort that are influenced by external circumstances. In fact, in the case of low temporal discounting, the more the future self is distant from the present self, the greater the effort is for the agent to be patient. In the case of the prohibition of using others as means, the more the agent is distant (physically and/or socially) from the person with whom she exchanges places, the greater the effort is for the agent to imagine being the other person.

A normative theory that is biologically feasible contributes to Nagel's and Williams's project of reducing the conflict between the agent's moral life and her good life [104: ch. 1; 105: ch. 10]. In their view, a moral life, i.e. an existence respecting the requisites of a moral theory, can threaten a desirable life because of some impersonal requisites. A desirable life is an existence that is considered good by the individual who is living it; this life comprises moral life but it is more complex. The NUTSP is valuable for moral philosophy for a second reason: it is not morally alienating – and thus too demanding – for the agent that wants to live a moral and good life at once.

It could be objected that a high effort to adopt prudent behavior when taking care of strangers and of the distant future self is similar to the alienation of the unnatural or lost moral theories. However, although the care of strangers and of the distant future self is more difficult to undertake than other prudent acts, it does not cause the

individual's loss of one or more essential elements of her way of making decisions. The care of strangers and of the future self is compatible with our brain functioning in decision-making. Moreover, if we drew the conclusion that taking care of strangers and of the future self is wrong or weakly prescriptive from the fact that this behavior is difficult, we would infringe Hume's Law.

A second objection that may arise is the observation that a normative theory receiving empirical confirmation of its feasibility has no extra value because the influences of social and temporal distance on the adoption of an alternative perspective are truisms. However, neuroscience and also behavioral economics provide the empirical confirmation of ideas that, albeit commonplace and seemingly plausible, without factual discoveries would remain mere falsifiable intuitions [106: 407].

7. The limitations of the UTSP and NUTSP and future research on these theories

So far the UTSP is based on Buckner and Carroll's self-projection system, O'Connell et al. (2015)'s theoretical framework of intertemporal choices, and on evidence provided by Spreng et al. (2008) and Spreng and Grady (2010). However, in the self-projection system, the mutual influences of ToM, on the one hand, and episodic future thinking and episodic memory, on the other, do not find complete consensus [74, 108-109]. According to the self-projection system, ToM, autobiographical memory, and episodic future thinking derive from the same ability. Consequently, future investigation should assess whether impairments in OPT accompany a deficit both in distancing and in intertemporal choice tasks with cues prompting individuals to imagine personal future events. This prediction is not easy to verify because, firstly, patients that have lost the ability to recollect personal happenings are rare. Secondly, ToM is a complex ability consisting of different processes; hence, if the ability to shift into another person's perspective is limited because the individual is no longer able to recollect personal memories, she may compensate for this deficit with semantic memory or other general knowledge abilities that she has acquired before the injury [110-111]. Therefore, future research on the co-occurrence of deficits in autobiographical memory, ToM, temporal discounting and distancing needs to control for the different components of ToM.

Concerning the limitations of the NUTSP, currently its effectiveness is based on indirect evidence of its ability to better the agent's moral and economic conditions. With regards to the prescription of considering one's own well-being in the long run, a study that directly investigates if low discounters are better-off than the average would further prove the effectiveness of the NUTSP. With regards to the prescription of not using others as means by using the imagine-other perspective, a study that directly examines the correlation between the imagine-other perspective and moral development would be very useful in testing the effectiveness of the NUTSP. Another possible way of evaluating the effectiveness of the NUTSP is to compare it with the ability of other normative decision-making theories to better the individual's moral and economic conditions. However, in order to test the ability of a prescription to better one's moral condition, a clear and measurable definition of moral development on which there is some agreement is needed.

Conclusion

In this article, I have outlined an updated theory of prudence, the UTSP, which is inspired by Smith's prudence and is in line with the neuroscientific findings on OPT, distancing, temporal discounting as well as risk and loss aversion.

The UTSP is an important resource for neuroscience because it embraces the cognitive processes corresponding to Smithian prudence within a single framework that points out their mutual influences. In this theory, prudence is conceived as a Smithianly prudent style of decision-making, which consists in the attitude of choosing in view of one's present and future well-being, taking into account other people and opting for the safest alternative. The UTSP is useful not only for neuroscience, but also for moral philosophy because, since it embraces and connects several human traits that are involved in decision-making, it sheds light on the addressees of moral theories.

The UTSP is the basis of a normative theory, the NUTSP, that is a valuable resource for moral philosophy for two reasons. Firstly, this normative theory is effective in leading the individual to better her economic and moral conditions, according to indirect preliminary evidence. Secondly, as the NUTSP is based on an empirically sound account, it has the advantage of avoiding a source of alienation for the agent that wants to live a moral and good life at once.

Although Smith's thought has been extensively dealt with both in moral philosophy and economics, its potentialities have not yet been fully realized and neuroscientific research has expanded their reach. Prudence is one of Smith's ideas the potential of which has not yet been recognized and exploited. The present article is an attempt to develop this idea by making it interact with neuroscience and behavioral economics, which share with Smith two investigative aims: human actions and decisions. The potential of Smith's concept of prudence that emerges from the interaction is the marked impact of this concept in the study of human decision-making. Accordingly, the descriptive and normative updated theories that I have derived from Smithian prudence should be taken into account by the disciplines dealing with human decision-making, whether investigating how individuals make decisions or how they ought to make decisions.

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